

REMARKS

In view of the above amendments and following remarks, reconsideration of the rejections that are contained in the Office Action of August 20, 2008 is respectfully requested.

In the Office Action, the Examiner rejected claim 112 as being unpatentable over U.S. Patent 6,267,853 to Dordi et al. (1) (Dordi1) in view of U.S. Patent 6,231,428 to Maloney et al. (Maloney), U.S. Patent 6,309,981 to Mayer et al. (Mayer), U.S. Patent 6,176,992 to Talieh (Talieh) and U.S. Patent Publication 2002/0157960 to Dordi et al. (2) (Dordi2). Further, claim 113 was rejected by the Examiner as being unpatentable over Talieh in view of Dordi2. However, it is respectfully submitted that the present invention, particularly as now set forth in new claims 118-123, clearly patentable distinguishes over all of the references that have been cited by the Examiner.

By the above amendments, claims 112 and 113 have been canceled. Claims 118-123 are newly presented, and all of these claims correspond to the elected invention.

It may be seen that claim 118 generally corresponds to prior claim 113 in being directed to a metal film forming unit that includes a substrate holding portion, anode, cathode electrode, seal member, plated liquid supply member, etc. However, it will also be appreciated that the limitations of the claim have been substantially amended with respect to prior claim 113 so as to focus on the aspect to be discussed below.

Claim 123, it may be further seen, is directed to a semiconductor substrate processing apparatus, generally in a similar manner as with respect to prior claim 112.

Both independent claims recite a metal film forming unit in which a substrate holding portion is configured to hold the substrate with the surface to be plated facing up, being capable of rotating the substrate, and being capable of moving vertically between an upper plating position and a lower cleaning position. Both claims also recite that the cathode portion has a cathode electrode and a seal member located above the substrate when held by the substrate holding portion and configured to rotate together with the substrate holding portion. Further, both claims specifically require that the substrate holding portion in the cleaning position and the cathode portion are configured to rotate

together with each other, with the surface of the substrate being out of contact with the cathode electrode and the seal member.

Support for these limitations can for example be found by reference to the discussion on page 50 of the substitute specification generally, with reference to Fig. 9, and more particularly with reference to lines 18-27 of page 55 of the substitute specification.

Thus, by the present invention as now set forth in new claims 118 and 123, the substrate holding portion and the cathode portion, which includes the cathode electrode and the seal member, are rotatable together. That is, when cleaning or rinsing the cathode portion with pure water or a chemical liquid, the substrate holding portion and the cathode portion rotate together with each other. The substrate is out of contact with the cathode electrode and the seal member at the lower cleaning position, it is noted. With this configuration, the cathode electrode and the seal member can be cleaned in their entireties, with the pure water or chemical liquid being supplied directly thereto, or indirectly via the rotating substrate.

In rejecting claim 112, the Examiner cited Dordi I as having a plated metal/electroplating film forming unit 240 and also a substrate holding portion 450 in Fig. 6. The wafer holding assembly 450 of Dordi I (see column 15) comprises a wafer holder 464 and a cathode contact ring 466. A cathode contact ring 1800 is also shown in Fig. 9. However, a cathode portion here is not located above the substrate when held by the substrate holding portion. Nor is the substrate holding portion configured to hold the substrate with the surface to be plated facing up and to rotate the substrate.

As can be appreciated from the figures of Dordi, for example Fig. 3, as well, the cathode is stationary and is not configured to rotate with the substrate holding portion.

Talieh was further cited by the Examiner as having a substrate holding portion 25 and a cathode electrode 28 in Fig. 2. However, in Talieh both the cathode and the wafer, or the non-illustrated substrate holder, are stationary, as can be seen from Fig. 2. Note lines 37-38 of column 5 of Talieh, where this fact is clearly described.

Accordingly, it may be seen that neither Dordi I nor Talieh discloses or suggests that the substrate holding portion and the cathode portion be configured so as to rotate together in the lower

cleaning position with the surface of the substrate out of contact with the cathode electrode and the seal member.

It is additionally noted that neither Dordi1 nor Talieh teaches or suggests a nozzle that is configured to supply pure water or a chemical liquid to the cathode portion or the surface of the substrate when held by the substrate holding portion in the cleaning position.

Dordi2 is cited by the Examiner as teaching a vertically movable substrate holding member that is rotatable. Dordi2 is combined with both Dordi1 and Talieh in the respective rejections. However, Dordi2 involves a complete rearrangement of the inventions of Dordi1 and Talieh. In other words, there is no reason one of ordinary skill in the art would have attempted some hybrid combination of the two given their quite distinct operational solutions.

Even if it was obvious to combine Dordi2 with Dordi1 or Talieh, Dordi2 still does not disclose or suggest that the cathode portion be configured to rotate together with the substrate holding portion in a cleaning position with the surface of the substrate out of contact with the cathode electrode and the seal member. This is clear from the configuration of Dordi2.

Accordingly, in view of the above it is respectfully submitted that all of the claims that are now pending in the present application clearly distinguish over the references that have been cited by the Examiner. It is noted that the additionally cited references to Maloney and Mayer also do not cure the above defects of Dordi1, Dordi2 and Talieh. Accordingly, indication of the allowability of all of the claims that are pending in the application is respectfully requested.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicants' undersigned representative.

Respectfully submitted,

Norio KIMURA et al.

/Nils E. Pedersen/

By: 2008.11.20 14:05:56 -05'00'

Nils E. Pedersen
Registration No. 33,145
Attorney for Applicants

NEP/krq
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
November 20, 2008